Cross-Connection Control Frequently Asked Questions

QUESTION: **What is a cross-connection?**
ANSWER: Any actual or potential connection or arrangement, physical or otherwise, between a potable water supply system and any plumbing fixture or tank, receptacle, equipment, or device, through which may make it possible for non-potable, used, unclean, polluted, contaminated water, or other substance, to enter any part of such potable water system under any condition.

QUESTION**: What is backflow?**
ANSWER: Backflow is the undesirable reversal of flow of non-potable water or other substances through a cross-connection and into the piping of a public water system or consumer's internal potable water system. There are two types of backflow... backpressure backflow and backsiphonage.

QUESTION: **What is backpressure backflow?**
ANSWER: Backflow caused by water pressure in a facility that is higher than the pressure of the public drinking water supply. This may be caused by pumps, boilers, gravity or other sources of pressure.

QUESTION: **What is backsiphonage?**
ANSWER: The reverse flow of used, contaminated, or polluted water from a plumbing fixture or device into the public drinking water due to reduced pressure. This can be caused by nearby firefighting, water main breaks or repairs.

QUESTION: **Why do water suppliers need to identify unprotected cross-connections and protect their public water systems against backflow?**
ANSWER: Backflow into a public water system can pollute or contaminate the water in that system creating a public health risk. Water suppliers are responsible for providing water that is always safe to drink. Consumers have an expectation that water delivered to them through a public water system is always safe to drink.

QUESTION: **What are common backflow hazards in a residential system and what type of protection is needed?**
ANSWER: Most plumbing fixtures in a residence such as sinks, tubs and hose bibs have an air gap or vacuum breaker built in for protection. The most common residential hazards would be submerged hoses, boiler heating systems, and in ground lawn irrigation. Making sure hoses are not left submerged is an easy solution and boilers or irrigation would require the installation of a testable backflow preventer to eliminate the possibility of contaminating the water in the residence and the distribution system.

QUESTION: **Why am I required to install backflow prevention now when I have been in business for many years without it?**
ANSWER: Once the city has knowledge of unprotected cross connections it is responsible for taking measures to protect the public water supply. Historically municipal water systems have assumed that plumbing codes were followed when work was performed in their system. However, it has been found that this is rarely the case. We follow E.P.A. guidelines for protecting our public water supply.

QUESTION: **What is Containment?**
ANSWER: Installation of an approved testable backflow preventer on the water service line immediately following the meter or at the service entrance to the building.

QUESTION: **What is Isolation**

ANSWER: Installation of a backflow preventer at the cross connection on each piece of water-using equipment, such as a boiler, mortuary aspirator, lawn irrigation, chemical mixer/dispenser, etc.

QUESTION: **What is thermal expansion?**

ANSWER: The volumetric increase of water pressure due to heating resulting in increased pressure in a closed system.

QUESTION: **How is thermal expansion addressed?**

ANSWER: Any time a system is closed with the installation of containment a thermal expansion tank must be installed to absorb the pressure fluctuations and protect the internal plumbing of the building.

QUESTION: **Who can install a backflow prevention assembly?**

ANSWER: Assembly's must be installed by a plumber licensed in the state of Iowa.

***QUESTION*: What are some examples of business types that would require backflow prevention? (List is not exhaustive)**

ANSWER:

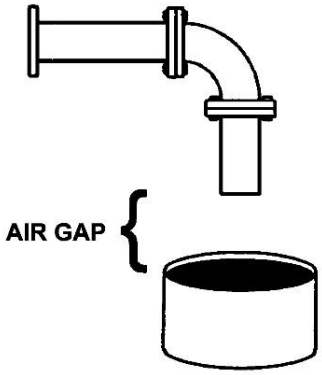
- Agriculture Chemical mixing
- Agriculture livestock operations
- Breweries
- Buildings with central heating & cooling systems (boilers, chillers)
- Car Wash
- Food manufacturing
- Funeral Homes
- Exterminators
- Golf Courses
- Grocery & Convenience Stores
- Industrial customers
- Lawn Care chemical applicators
- Medical & Dental Clinics
- Manufacturing
- Multiple commercial tenants served by one meter
- Nail Salons
- Private wells
- Restaurants

QUESTION: **What is a backflow preventer?**

ANSWER: A backflow preventer is a means or mechanism to prevent backflow. The basic means of preventing backflow is an air gap, which either eliminates a cross-connection or provides a barrier to backflow. The basic mechanism for preventing backflow is a mechanical backflow preventer, which provides a physical barrier to backflow. The principal types of mechanical backflow preventer are the reduced-pressure principle assembly, the pressure vacuum breaker assembly, and the double check valve assembly. A secondary type of mechanical backflow preventer is the residential dual check valve.

QUESTION: **What is an approved backflow prevention assembly?**
ANSWER: An assembly that has been approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USC)

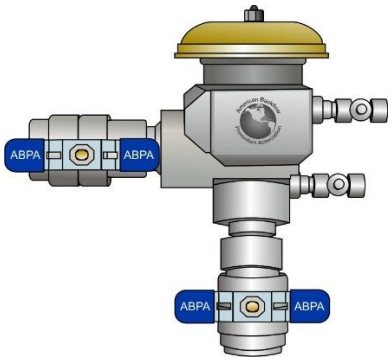
QUESTION: **What is an air gap?**
ANSWER: An air gap is a vertical, physical separation between the end of a water supply outlet and the flood-level rim of a receiving vessel. This separation must be at least twice the diameter of the water supply outlet and never less than one inch. An air gap is considered the maximum protection available against backpressure backflow or backsiphonage but is not always practical and can easily be bypassed.



QUESTION: **What is a Reduced Pressure Backflow Prevention Assembly (RP)?**
ANSWER: An RP (Primarily used for containment) is a mechanical backflow preventer that consists of two independently acting, spring-loaded check valves with a hydraulically operating, mechanically independent, spring-loaded pressure differential relief valve between the check valves and below the first check valve. It includes shutoff valves at each end of the assembly and is equipped with test cocks. An RP is effective against backpressure backflow and backsiphonage and may be used to isolate health or nonhealth hazards.

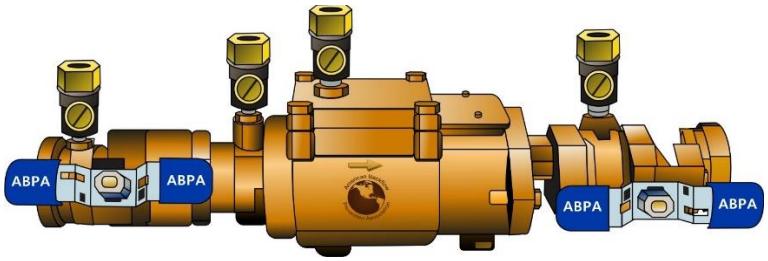
QUESTION: **What is a Pressure Vacuum Breaker Assembly(PVB)?**

ANSWER: A PVB (only used as an isolation device) is a mechanical backflow preventer that consists of an independently acting, spring-loaded check valve and an independently acting, spring-loaded, air inlet valve on the discharge side of the check valve. It includes shutoff valves at each end of the assembly and is eqipped with test cocks. The PVB may be used to isolate health or nonhealth hazards but is effective against backsiphonage only.



***QUESTION*:** **What is a double check valve assembly (DC)?**

ANSWER: A DC (only used in low hazard fire protection systems) is a mechanical backflow preventer that consists of two independently acting, spring-loaded check valves. It includes shutoff valves at each end of the assembly and is equipped with test cocks. A DC is effective against backpressure backflow and backsiphonage but should be used to isolate **only non-health hazards**.



QUESTION: **What is a Spill-Resistant Pressure Vacuum Breaker Assembly (SVB)?**
ANSWER: An SVB (only used as an isolation device) assembly contains an independently operating internally loaded check valve and independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with a properly located resilient seated test cock, a properly located bleed/vent port, and tightly closing resilient seated shutoff valves attached at each end of the assembly.
This assembly is designed to **protect against a non-health hazard** (i.e., pollutant) **or a health hazard** (i.e., contaminant) under a backsiphonage condition only.

QUESTION: **Why do backflow preventers have to be tested annually?**
ANSWER: Mechanical backflow preventers have internal seals, springs, and moving parts that are subject to fouling, wear, or fatigue. Also, mechanical backflow preventers and air gaps can be bypassed. Therefore, all backflow preventers have to be tested periodically to ensure that they are functioning properly. A visual check of air gaps is sufficient, but mechanical backflow preventers have to be tested with properly calibrated gauge equipment.

QUESTION: **Who can perform the annual test to backflow preventers?**
ANSWER: All backflow devices must be tested by a technician registered with the Iowa Department of Public Health.